interest of improved maternal and child health, a few suggestions are made.

Purpose and Method

The purpose of this study is to set down the ethnographic data concerning childbirth in Bang Chan, following out the economic, social, religious, and cosmological aspects as needed to clarify the behavior and the psychological attitudes noted. The hope is that not only anthropologists but persons working in programs of maternal and child health will find the data useful.

The data were gathered from Buddhists and Muslims in Bang Chan by interviews and direct observation. Because Dr. Hazel Hauck, in the course of nutritional studies also made inquiries "from the standpoint of anthropological study rather than because of an assumed relation to nutrition or health" (1959:3) she first opened up the broad outlines of the subject. The author, with Dr. Saovanee as an interpreter of unusual competence, and Dr. Saovanee herself then pursued the subject further, including interviews at the Mīnburī Health Center and at Cha Choeng Sao.

A few comparative references such as to McFarland's dictionary and Phya Anuman's researches are given, but the focus is always [illegible] on Bang Chan. Though many of the findings will have a certain pertinence in Bangkok, the fact that Kaufman found striking differences in Bang Khūat only 8 kilometers away shows how cautious generalizations must be.

The transliterations of Thai words are only approximations, based on the system promulgated by the Royal Institute of Thailand; the tones have been omitted. With the translation always adjacent and a glossary provided at the end of the volume, the author feels there should be little confusion. Proper names which are generally known in a different transcription are left in their familiar form. In referring to works by Thai authors western custom is followed but in referring directly to the authors themselves Thai custom is followed, as it should be in direct address.

105 262 Sweets and fruit were the items most commonly eaten. Fruits were seldom eaten except as snacks.

271 105 The customary beverage with meals was untreated water. Rain water was preferred for drinking, but for 3 or 4 months of the year, water from the canal or fish pond was used.

105 262 Attitudes toward food, and foods considered appropriate for the very young, the old, for the pregnant or nursing woman and for use during illness, are briefly discussed.

105 126 146 Quantitative food intake for 11 families was recorded on a total of 44 survey days distributed throughout the year. Two groups of families, in which individuals were matched so far as possible as to age and sex, were selected on the basis of apparent difference in nutriture. The sample was not stratified with respect to economic conditions, but those in Group B, chosen for apparently better nutriture proved to be, in general, more prosperous than those in Group A, chosen because of signs of poor nutrition.

105 146 Food values were calculated on the basis of published analyses. Conservative nutrient allowances were estimated for residents of Bang Chan. On the average, calories, protein, iron, niacin and ascorbic acid in the diets of persons in Group B approximated or exceeded these allowances. For Group A, this was true for niacin and ascorbic acid only. Average intakes of riboflavin were estimated to be about 1/3 or less of the allowances, and estimates of calcium intake were about 20% of the allowance for Group A and 30% of that for Group B. Vitamin A values of diets for both groups appeared to be low, and thiamine intakes marginal or low. The signs observed among persons in these families were generally those associated with low intakes of thiamine, riboflavin and vitamin A.

Rice contributed about 4/5 of the calories and over half the protein in diets of both groups. Animal foods, chiefly fish, furnished about 2/5 of the protein. Intake of fats and sugar was small. Snacks of fruit contributed about 1/6 of the total ascorbic acid for Group A, and about 1/9 for Group B.

Seasonal variations in food preparation, meal patterns, food costs and caloric and nutrient values of foods eaten are discussed. Higher caloric intake during heavy work seasons was largely accounted for by larger amounts of rice eaten. The highest intake of protein for both groups occurred in the post-harvest season, when fish ponds were drained.

Questions for further study are proposed, and possible approaches to improving food habits and nutritional status in Bang Chan are suggested.

INTRODUCTION

121 This study of food habits and nutrient intakes in a Siamese rice village was undertaken in connection with the Cornell Thailand Project. The project is one of several under the auspices of the Department of Sociology and Anthropology, which are focused on the process of cultural change
114 in non-industrialized societies. Dietary studies designed to contribute to a base-line description of the community were carried out from September, 1952 through May, 1954. Local headquarters, where members of the research group kept equipment, and could stay overnight, were maintained in the village.

128 The observations to be reported fall into two general categories: 1) descriptive information concerning many aspects of the food situation in Bang Chan and 2) quantitative information on food intake, and its estimated nutrient
126 value, for 11 selected families. Qualitative information on food in Bang Chan was obtained from several sources: 1) field notes made by various members of the Cornell research group, 2) structured interviews with mothers about their own food, and that of small children in the family, 3) records of food eaten during 24-hour periods, submitted by children in the third and fourth grades of the elementary school as homework for the health class, and 4) weighed dietary studies carried
114 out in 11 selected households. Quantitative information on food intakes was obtained from the latter source only. Most of the data to be presented were obtained between September 1952 and June 1954, but supplementary information was obtained from a diary for 1955, kept by a school teacher at the request of the research group, a study of innovations made by Ralis in May 1955 (Goldsen and Ralis, 1957) and information provided at our request by members of the Cornell research group who were in Thailand in the summer of 1957.

A general account of the economic, political and social organization of Bang Chan in 1948-49, together with some material on health and diet was given in the first interim report issued on the Thailand Project (Sharp et al., 1953). The second interim report concerned aspects of health, sanitation and nutritional status in Bang Chan in 1952-54 (Hauck, 1956), and the third was a report on factors related to acceptance of innovations (Goldsen and Ralis, 1957).

THE COMMUNITY

Location, Climate, Transportation

131 Bang Chan is situated in the rice-producing area of central Thailand, about twenty miles by road northeast of Bangkok.

GENERAL DESCRIPTION OF FAMILY FARE IN BANG CHAN

As we turn to a detailed description of the family fare, we should like to point out that starvation was unknown in Bang Chan. Although much room remains for improvement in diet, "hollow hunger" was uncommon. In the few times when disastrous flood destroyed the year's crop, the government was able to provide enough rice so that it need not be rationed. People still ate their fill. Even floods had their advantage: one could fish out the window. That gross caloric undernutrition was rare was borne out by examination of the school children (Hauck, 1956). "On the average . . . Bang Chan children could not be considered as markedly underweight. Few were so thin that one could 'count their ribs' and still fewer would be considered plump by American standards." In a random sample of village households that included about 10% of the population, the heaviest man weighed 69 kg. (151.8 pounds) and the heaviest woman 70 kg. (154 pounds). We noted no more than half a dozen adults who appeared to be "overweight." Most were middle aged or older, and none of them did strenuous field work.

Sources of Food

Home Production, Storage and Preservation

Rice. - Rice is an essential part of any Thai meal. The majority of the rice farmers in Bang Chan had rice for home consumption milled for them at Minburi. In general, they took their own paddy to the mill, and brought the resulting milled rice home, where it was stored in a box or mat-bin. Although, according to a recent survey (Goldsen and Ralis, 1957) nearly a third of the households owned a home rice mill, undermilled or home-pounded rice was not widely used in Bang Chan. Information on this point was obtained for 333 of 336 "kitchen-unit"[1] households in the village. Of these 5 consumed home-milled rice only, 51 used home-milled rice in major part, 78 in minor part, and 199 not at all.

In households where home-milled rice was used, during June enough would be pounded to last until harvest, at which time hands were sore and bleeding from the field work and home pounding was impossible. At the time when data for the present report were being gathered, most families took paddy to the mill when water in the canal was high enough so that it could be transported by boat. If a farmer on a subsidiary

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1. In some large houses, two related family groups lived together but maintained separate kitchens.

canal misjudged his needs for milled rice and ran out, he had to mill his own paddy. Since the main canal was deepened in 1953, year-round transportation of rice by boat has been possible for many more farmers, and this may further decrease the consumption of home-milled rice.

Of 105 households which had and used a home rice mill, 99 used the polishings for feed but no family in Bang Chan used them for human food (Goldsen and Ralis, 1957). One farmer, headman of a hamlet, who lived near the main canal and the road to Minburi but who used home-milled rice, offered as the reason that the polishings were good chicken feed, and if he took rice to Minburi to be milled, the miller would keep the polishings.

As reported by Janlekha (1955) consumption of milled rice in 106 households amounted to about 285 kilograms per capita per year or 780 grams per person per day. Such "household consumption" includes "losses to pests and poultry, daily gifts to priests, contributions to temples and outlays for feasts and rites in undetermined but considerable amounts" (Sharp et al., 1953, pp. 265-266).

Flesh Foods Other than Fish. - The people of Bang Chan had a taste and appreciation for flesh food, but the production and use of meat was certainly inhibited by Buddhist tenets which prohibited the taking of life.[1] Killing of poultry, fish, etc. was tolerated among the relatively young, but was considered unsuitable to the aged who should be preoccupied with living virtuously. People felt, however, that the sin of taking life was condoned if they offered part of an animal to the priests.

Since many villagers were unwilling to slaughter buffaloes even when they become aged and useless, such animals were commonly kept until they died. Animals which had died of old age or disease were not, however, regarded by Thai Buddhists in Bang Chan as unfit for human consumption. Usually they were cut up and given to the priests. When the buffalo belonging to one family (Household 67)[2] participating in the dietary survey died, some of the meat was used fresh for curry, much

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1. Meat such as water buffalo and pork as well as fish was sold by venders. Since meat was relatively expensive and was usually used in small amounts with other foods, it was offered for sale in chunks which no longer resembled the living animal. Seeing such small quantities spared the sensibilities of the Buddhists who were thus removed a step from the killing. Actual butchering was done by Moslems or Chinese who did not object.

2. Households were identified by numbers assigned by lot.

273 in 1955 (Goldsen and Ralis, 1957, p. 57) said they drank whiskey often, 22% drank occasionally, 47% seldom, and only 22% said they never drank it.

Sale of Home Produced Foods

433 434 443 Although a majority of the families in Bang Chan made most of their cash income by rice farming, sale of other home produced foods, fish, and food materials such as swamp cabbage and lotus stems which grew wild in the canals was a minor but relatively steady source of income for many families. Six of the 11 families that participated in the dietary [462] study obtained some income from sale of food[1]. The woman frequently had major responsibility for these activities. As noted by Sharp et al. (1953), a few poor families only, added to their income by selling fish.

121 In connection with this study, our concern with sale of home produced foods is primarily with the nutritional rather than the economic aspects,[2] although the two cannot be completely dissociated. Do activities of this sort on the part of some families make a greater variety of foods available to the villagers as a whole? Are some foods sold for cash which from the nutritive standpoint, might well be kept for home use? If so, is the cash thus obtained used to purchase other foods or non-food items? Is the food purchased as useful, from the nutritive standpoint, as that sold? From the standpoint of improving the nutritive value of the diet of Bang Chan families in general, would more home production of fruits, vegetables, fish and eggs by most families be feasible, or should a few families be encouraged to develop these activities on a year round basis, to increase the local supply of food other than rice? Questions of this sort must be considered by anyone attempting to improve food habits in the village.

Annual Calendar of Foods Commonly Used

221 227 125 [125] From the records extending over the period of a year, of foods used by various families participating in the dietary study, and from food records provided by children in the health classes in December 1952, February, May, June, July, September, October and November 1953, and January 1954, a calendar has been constructed showing the approximate times of year at which the foods most commonly used in Bang Chan were available (Chart 2). Foods included in this chart were

1. See Table 8, p. 62.

2. See Janlekha (1955).

[Text continues on page 29 ... Analyst]

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Chart 2. Annual Calendar of Fresh Foods Commonly Used in Bang Chan[1]

	No. Records[1]	May	June	July	Aug.[2]	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.[2]	Apr.[2]
Fish													
Climbing perch	114	x[3]	x	x		x	x	x	x	x	x		
Eels	27	x	x	x		x	x	x		x	x		
Field crab (salted before use)	16	x					x	x		x			
Oysters	22		x	x			x			x			
Notopterus notopterus	10	x						x	x		x		
Serpent head	99	x	x	x		x	x	x	x	x	x		
Silurus	66	x	x	x		x	x	x	x	x	x		
(1)plaa (1)thuu	163	x	x	x		x	x	x	x	x			
Other Animal Foods													
Beef	30	x				x	x	x	x	x	x		
Chicken	72	x	x	x		x	x	x		x			
Eggs	142	x	x	x	x	x	x	x	x	x	x	x	x
Frogs	18	x	x	x				x		x			
Pork	51	x	x	x		x	x	x	x	x	x		

1. Based on 539 records obtained from school children, and observations in 11 households on 44 survey days. Figures in the column headed No. Records indicate the number of 1-day records on which the item appeared.

2. No records were obtained from school children during March, April or August, hence absence of the item from these columns means simply that the 4 households visited in each of these months did not use the item.

3. x indicates that the item appeared frequently on records obtained in this month. Note that frequency of use may be influenced by farm work and circumstances other than relative availability.

listed on 10 or more of the 24-hour dietary records obtained. For items which were major ingredients, the number of records on which the item appeared, is given.[1] Thus (1)plaa (1)thuu, which is bought by residents of Bang Chan during the busy work seasons, was used more often than any other single variety of fish named. Of the varieties caught locally, climbing perch, serpenthead, and silurus were most commonly used. Fermented fish, not included in the calendar, appeared on 53 records, and fish with kind not specified, on 180. Eggs were used more often than any animal food other than fish. Among green vegetables, swamp cabbage and (2)phag (2)ka-(2)cheed were commonly used. Bamboo shoots and lotus stalks were prominent among the non-leafy vegetables. Bananas which are grown in every garden and are available all year round were much the most common fruit, although other seasonal fruits were eaten more often in 6 of the 9 months in which school children submitted records.

Some idea may be obtained of peak seasons for use of various common foods by noting the months designed by x. Thus in January and May, serpentheads were listed on about 1/3 of the records, and were frequently served at more than one meal. Sweet potato, usually fried and eaten as a snack, was listed on 35 of 52 records obtained from school children in September. Flowers of the West India pea tree were listed on 10 of 55 records in October, and 12 of 88 in November, with occasional mention on records obtained in 4 other months.

Fruits were eaten much less often than one might expect in a tropical area where many varieties are available and fruit can be grown the year round. They were most often eaten by children as snacks, although pineapple and papaya were usually, and banana occasionally cooked in "with-rice" dishes such as curry. In September, fruit was included in the diets of less than 1/3 of the children. An average of more than one serving of fruit per child per day was recorded in 5 months only, May, June, October, November and February. In May, when (4)ma-(1)faj or rambai was in season 46 of 76 children reported having eaten it. Pineapple, listed by 35 of 61 children in June, was most often served in curry at one or more of the family meals. In October, oranges were eaten by 30 of 55 children who submitted records. Bananas (mostly of the (4)nam-(4)waa variety) topped the list in November and February.

Items mentioned on fewer than 10 records, and hence arbitrarily omitted from the chart, are worth noting as they

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1. No figures are given for sweet basil, garlic, onions, chili or limes, which were so often used in small amounts as seasoning that the count obtained would give no clear idea of the extent of their use. Some common spice plants were not mentioned on the records.

might provide clues to ways in which the diet may be improved. Most of these items were included in lists given by Sharp et al. (1953)[1]. To those lists should be added the following items from our food records:

Green leafy and yellow vegetables: Leaves of bergamot, chili, morinda, onion, potato, pumpkin, (2)sa-(5)noo, and of the following trees: (2)ma-(1)dan, (4)khlyb[2] and West Indian pea tree; (2)kha-(1)cauaun flowers.

Other vegetables: flowers of leek and pumpkin, and Chinese or black truffle (water chestnut).

Fruits: Thai nutmeg and tomato.

Fresh foods other than fish: buffalo, duck, cobra, turtle and field rat.

At the end of Chart 2, sources of water for drinking and food preparation have been included, not only because water is properly considered a nutrient, but also because the water used in preparation of food may affect the wholesomeness of foods eaten raw or with little cooking.

Untreated water was the customary beverage with meals. Ordinarily no distinction was made in source of drinking water for children and adults although boiled water was given to mothers and infants to drink during the post partum rest period (Hauck, 1956). Occasionally a sick person would be given boiled water to drink; for example one man who said he was "a little sick" and "not working" was observed to drink hot boiled water from a thermos bottle. In 1955, Ralis[3] found that tea was seldom or never drunk by nearly 3/4 of the respondents. Less than 7% drank it frequently. Thus in Bang Chan no custom had grown up which would afford the general population with a measure of protection against infection from

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1. See Sharp et al., 1953, pp. 193-196 for a list of 32 fish known to be found in Bang Chan; pp. 293-294 for 34 fruits grown in Bang Chan, and p. 295 for 11 fruits known to be used but not grown there; pp. 296-298 for 41 vegetables grown in Bang Chan, and pp. 299-300 for 24 other vegetables used.

2. (4)Khlyb was the term used in Bang Chan for an unidentified tree of the family Leguminosae. Its sweet tasting leaves were washed in boiling water to get rid of a bad odor, then were eaten with (4)nam (4)phrig, a chili sauce.

3. Golden and Ralis, 1957, p. 57. The answers to: "Do you drink tea frequently, occasionally, seldom or never?" were: often, 22; occasionally, 68; seldom, 158; never, 85.

The observer often had
126 opportunity to make notes on foods eaten by various family
262 members. Two examples of these are included in Appendix A,
p. 97.

Snacks

262 We have noted that various family members ate the morn-
264 ing meal, in particular, at different times, and that children
555 especially might eat leftover food between meals. Most Bang
Chan school children[1] ate snacks, which were usually different
from foods eaten at a regular meal. Doubtless most of them
were purchased from one of the venders who were to be seen on
the school grounds daily. Fruits and "desserts" were most
commonly eaten, although a variety of other foods, not a part
of the usual Thai meal, were also listed. Sweets were listed
about 450 times on the 539 records obtained. Many of them had
a base of rice, rice flour or glutinous rice with sugar, and
included coconut, banana or other fruit. Some were made with
legumes, and a few contained egg. Fried bananas, fried sweet
potato slices, bananas or beans cooked in syrup, and bananas
cooked in sweetened coconut milk were also listed. A few
items such as ices, flavored syrup poured over shaved ice, and
candies, had little nutrient value other than caloric content.

272 A glass of milk, and milk with coffee, were each listed
once. These might have been obtained at the store adjoining
the school grounds. These instances are worth noting primar-
ily because, although dried and tinned milks were obtainable,
milk was seldom given to village children after weaning.

262 Many children were given a bit of cash each day, and
437 Janlekha (1955) commented that some children who did not have
855 any might barter an egg for snacks. One could tell fairly
well from the children's records what the venders offered for
sale on a given day. Some influence of season was apparent;
thus ices and syrup over shaved ice were eaten more often dur-
ing the hot dry season, and cooked foods such as fried Chinese
noodles appeared primarily in the cool season.

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1. With the cooperation of teachers of the third and
fourth grades in the Bang Chan elementary school, records of
food eaten during 24-hour periods were obtained from children
in these grades at intervals of about one month during the
school year. This was a regular activity in the health class.
A total of 539 records (from 1 to 8 for each child) were ob-
tained from 75 boys and 72 girls. To facilitate recording,
each child was given a sheet of paper, with spaces for his
name, the date, and kinds of food other than rice, eaten at
the morning, noon and evening meals, and as snacks. These
records were collected primarily for information on meal pat-
terns of village families for comparison with the limited
sample in the dietary survey, and on seasonal use of various
foods.

262 Some snacks, i.e. seasonal fruits, may have been picked from the home garden, and items such as lotus seeds were probably gathered wherever the children found them.

Comments on Foods Eaten by School Children

• 126 264 855 In addition to the high percentage of school children who ate snacks, a conspicuous observation was that many ate no regular lunch (Table 3). We did not ask the children to record when they ate snacks, but only what they ate. The number of snacks recorded by individual children did not, however, appear to be related to whether or not they had eaten lunch. For example, among the 76 children who provided 24-hour food records during May, 1953, the average number of snacks recorded by the 39 children who ate a regular lunch and the 37 who did not, was about the same, i.e. a little over three per child.

Table 3. Number and Percentage of Children Who Ate Snacks, and Who Missed Lunch, Arranged by Months in Which Records Were Obtained

Month[1]	No. of Records	Children who ate snacks		Children who missed lunch	
		No.	Percentage	No.	Percentage
May 1953	76	73	96	37	49
June 1954	61	56	92	32	53
July 1953	79	77	98	53	67
Sept. 1953	52	49	94	36	69
Oct. 1953	55	50	91	22	40
Nov. 1953	88	81	92	57	65
Dec. 1952	18	14	78	10	56
Jan. 1954	69	64	93	41	59
Feb. 1953	41	39	95	33	81
Total	539	503	93%	321	60%

1. Note that although the figures are arranged by month, the records were obtained over a period extending from December 1952 through June 1954.

264 855 [262] Most of the children who ate lunch regularly brought rice and some of the "with-rice" dishes prepared for a family meal in a lunch pail. Menus for breakfast and noon meals were often identical. Children who lived at a distance may have found it harder to carry lunch, especially when they had to walk to school, but the month by month record of the percentage of children who missed lunch (Table 3) does not indicate any clear seasonal trend. Even children who lived nearby might neither bring lunch nor return home during the noon recess. We were at the home of a school teacher, a short distance on foot from the school, when his two children returned in the afternoon. The mother said that they usually waited until after school to eat, but were having no snack on that day because for the first time, they had carried lunch to school.

• 126 262 Thorangkul (1957) scanned all of the dietary records to note the frequency with which the following food groups occurred: protein-rich food, carbohydrate-rich food other than plain boiled rice, vegetables and fruits. She considered the records of each child as a unit; thus if a boy for whom 5 daily records were available, had recorded protein-rich food such as fish, eggs, or beans 16 times, he was regarded as having more than 3 "servings"[1] of such food per day. The frequency with which various food items occurred in the daily diets of these children is shown in Table 4.

Considering the day's record as a whole, some protein-rich food, usually fish, was included in the records of 97% of the children. Such protein-rich food appeared two or more times per day in the records of over 80% of the boys and about 90% of the girls. In contrast, no fruit was mentioned in the records of about 10% of the children, although fruit was one of the commonest snacks. Vegetables were not mentioned in the records of 10% of the boys and 3% of the girls. Only about one-fourth of the vegetables recorded were green or yellow.

For 75 children for whom we had 4 or more records, Thorangkul (1957), to obtain a rough estimate of the adequacy of the children's diets, grouped the records into three categories, based on the number of times protein-rich foods, vegetables and fruits appeared. On the average, children whose diets were placed in Class I had at least 3 "servings" of protein-rich food, 3 "servings" of vegetables and 2 of fruits. Diets in Class II included some from each of the food groups each day, but the items were recorded less frequently than in diets in Class I. Diets in Class III did not include foods from each of the food groups emphasized, each day. On this

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[104] 1. The term serving is used here to designate each time an item appeared in the daily food record. Thai do not have "servings" as the term is used in Western countries.

Table 4. Frequency of Occurrence of Various Food Groups in the Daily Diet of 147 School Children in Bang Chan

(Adapted from Thorangkul, 1957)

Number of servings[1]	Protein-rich food	Carbohydrate-rich food[2]	Vegetables	Fruit
	Percentage, based on records of 75 boys[3]			
3 or more	47	8	28	8
2 to 2.9	36	15	23	18
1 to 1.9	13	40	30	37
0.1 to 0.9	3	37	9	26
None	1	-	10	11
	Percentage, based on records of 72 girls[3]			
3 or more	68	13	21	10
2 to 2.9	21	17	38	27
1 to 1.9	4	22	34	38
0.1 to 0.9	3	48	4	15
None	4	-	3	10

1. The term serving is used here to designate each time an item appeared in the daily food record.

2. Other than plain boiled rice, which is an essential part of every Thai meal.

3. Average frequency of occurrence was computed, considering the records of each child as a unit.

basis, nearly a third of the children who provided diet records had diets which were classed as III (Table 5). Almost all of the girls and about 4/5 of the boys in this group missed lunch. Indeed the common habit of eating just two main meals, with snacks, was probably one important determinant of the number of servings of protein-rich foods and

Table 5. Diet Classifications for 75 School Children in Bang Chan, and Percentage of Children with Each Diet Classification who Missed Lunch

(Adapted from Thorangkul, 1957)

Diet classification[1]	Percentage of children	Percentage of children who missed lunch	
Class I	8	Boys	46
		Girls	45
Class II	61	Boys	73
		Girls	68
Class III	31	Boys	81
		Girls	98

1. See text for basis of classification.

vegetables eaten, since items from these two food groups were not commonly eaten as snacks. Note, in the illustrative records presented in translation (Appendix A, p. 98), that the child whose diet was considered to be in Class III did not eat a regular lunch on any of the six days for which records were available, whereas the child whose diet was classified as I ate a regular lunch six times out of seven.

Family Food Shared With Others

Throughout the year families prepared especially good meals for persons who came to work cooperatively with them. Every rice-grower entertained his cooperative harvest crew, some the transplanters. Hired laborers were not usually served such feasts, but the conviviality of the harvest season called for a round of liquor even for them. One harvest dinner for 8 cost 50 baht, plus eels (60 baht) and rice. Cooperative home pounding of rice was still practiced in some households and thought to be fun. In one day enough rice to produce 40 tang (640 kg.) was pounded by groups of 15 to 20 workers; in an evening 20 tang were done. If 40 tang were milled, workers were served a full meal; if 20 tang, a dessert only. Other occasions were fish-pond draining, house raising and repair. Each participant in the fish-pond draining at Household 21 was fed (3)khaaw (3)tom (soupy rice) for lunch and "an enormous supper," in addition to receiving the traditional pot of fish. If good food were not served at these functions people

understood that her merit helped her not to be hungry. Once she asked an eminent layman about eating at night. He said, "If you are not hungry, do not eat. If you feel hungry, it is better to eat. If someone invites you to eat, it is sinful to refuse."

Even young adults had a strong revulsion against gluttony. One of the symptoms of a man who went mad and had to be committed to an institution was that "he ate too much." A woman was despised because "she ate in secret. She stole eggs from her husband, sold them in the market, and then spent the cash on food which she ate there, instead of bringing it home." Definitions of a glutton were, "A 'with-rice' eater," or simply as "one who eats alone." These comments highlight the counsels of eating in moderation and in company. On the other hand, a full stomach was valued for "home is where one eats one's fill."

At maturity, when farm and other tasks were shared as equals, men and women ate almost the same food. The old proscription against animal food for women was somewhat relaxed, but not entirely. To sustain farmers during the seasons of hard work, however, extra quantities of rice and rice alone, were considered essential. "With-rice" was pleasant but not so necessary. Any shift away from a diet of rice as ordinarily cooked in Bang Chan was construed as a shift either in occupation or in health. For example an eminent citizen who gave up farming took to eating (3)khaaw (3)tom often. This soupy rice, a staple dish for infant feeding, had interesting socio-economic connotations. It was served as a light lunch to cooperative farm-workers to be followed at the day's end by a real meal. It was also "delicate" food, suitable for the sick, for city-people, for those who did not toil with their hands and backs. Consequently, when this man ate this "delicate food" more often, he was consciously or unconsciously serving notice on the community that he was not going to do farm work any more, for (3)khaaw (3)tom could not possibly have sustained a farmer's strength. Caustic villagers hinted that he was putting on airs.

Among conditions in which some change from the usual diet was found were pregnancy, post parturition and lactation. Relatively few foods were generally considered to be tabooed under any of these conditions, but many women preferred to limit intake to "safe" foods if there were any possibility that certain foods might cause harm.

Information was obtained from 42 mothers about the food they ate during the post-partum rest period. Two said they ate as usual, but for the remainder, the diet was considerably

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1. Literally "beautiful rice." For method of cooking, see p. 33.

262 curtailed. About half ate soupy rice rather than rice as
843 usually prepared. All ate fish, but over half ate salted
846 fish only, and about one-fourth ate fresh fish only. Rice and fish were apparently the only foods considered safe by all of these mothers. The only other food eaten by half or more of them was banana of the (4)nam-(4)waa variety, baked bananas being commonly specified. Vegetables, when they were eaten, were usually in (1)kaeaeng (1)liang, a broth made with dried fish, and reputed to be valuable for milk stimulation. In Bang Chan, the inflorescence of banana was commonly used in making this product, but other vegetables were favored by some. When asked what foods they considered good for a woman who had recently borne a child, no mother knew of any such food, but the list of foods mentioned as being bad for the mother during the post-partum rest period included more than a dozen items mentioned from 1 to 4 times each: egg, sweets, beef, vegetables, meat, pork, poultry, fresh fish, sour tasting foods, jackfruit, mangoes, fruits of all kinds, and glutinous rice.

262 Fear of illness from eating incompatible foods after
842 child birth was rather strongly expressed by many informants,
753 even by some who knew of Chinese customs which were different
829 from the ancient Thai customs. Some also knew that foods which were customarily forbidden to the woman who had her child at home in the village, were not forbidden at the government health and maternity center at Minburi.

126 The 45 mothers who were interviewed during lactation,
262 but after work had been resumed, ate more nearly the usual
846 diet than was the case during the post-partum rest period. As in pregnancy, the mothers apparently had no notion of special dietary needs during lactation, but foods considered undesirable during lactation were mentioned 27 times. The list included 12 kinds of food, and four attributes of food, i.e. sour and hot tastes, fermented foods and raw foods. No food was considered harmful by a majority of mothers, the one which occurred most frequently, jackfruit, being mentioned by 8 only of the 45 informants.

262 Reasons were seldom advanced for considering various
753 foods unsuitable for mothers or children. During pregnancy,
853 the hot-tasting foods, i.e. those made with chili, were said by one informant to injure the baby's complexion. When asked at what age a child could have adult food, mothers might say at one or two years, but often specified without giving a reason, that the child could have anything but the hot-tasting foods. A reason given for omitting jackfruit from the diet during lactation was that it would cause diarrhea in the baby. One informant said that if a mother nursing a young baby, 1 or 2 months old, ate fresh vegetables, the baby would have diarrhea. Some informants said the "fragrant banana"[1] caused

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1. The type of banana most familiar to people in the United States.

435 Some information as to the cost in baht of the larger
796 ceremonies held in 1954, and their scale, was obtained from
[126] the school teacher's diary. Examples follow:

[792] Ordination: Total cost 8,000, including food 1400, liquor 800. Guests contributed 4000.

[852] Top-knot tonsure: Total cost 1550, including new utensils 550; 6 priests fed; each priest given 12 baht; 12 (2)pin-(1)toos filled to take to the temple; 100 duck eggs donated, and 300 baht received from 30-40 guests.

[714] Cremation[1]: Total cost 40,000[2], including about 10,000 for food; 61 priests fed[3]. About 500 guests contributed 4377.

[875] Homage-to-the-teacher ritual:
A: Total cost 715, including food 565 and liquor 150; 40 tang (800 liters) fish and 3 tang Chinese noodles donated.
B: Total cost, 11,000[4].

[585] Wedding: A: Thai Buddhist: Total cost 5000. Guests gave 2300.
[583] B: Rite of forgiveness after elopement: a meal, with 5 bottles of liquor.
[184] C: Moslem: 2 buffalo slaughtered. 400 guests.

585 Arranged marriages could be large merit-making affairs,
262 with a huge procession from one house to the other of twenty-
four "pairs" of specified foods, i.e. two bearers each of
[583] sugar cane, fruits, sweetmeats and other things. At more modest weddings and the rite of forgiveness for a couple who had eloped, food might differ from the usual fare only by including the three essentials of a wedding: pork, chicken and alcohol.

273 Increased consumption of alcoholic beverages during the
796 ceremonial season was indicated by the sales of one local
443

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1. Cremation was the last of several rites at death. Private 7-day, 30-day and 100-day rites were held, when priests came to the home to chant and to be feasted.

2. With cooperative assistance from well-situated relatives in Bangkok.

3. The whole chapter of priests from Wat Bang Chan
[792] was always included at cremations, and often others from a
[574] distance.

4. See list of food purchased, Appendix A, pp. 102-103.

APPENDIX A

Description of the Kitchen and Some Notes on Food Preparation in a Relatively Prosperous Household[1]

Friday, May 22, 1953

Arrived at 5:15 a.m. When we reached the house, the mother was holding the dog. The house was dark, and we walked around sleeping babies and children, ... The 15 year old niece who prepares meals here, was already at work. For light she had an oil lamp, a tin of about 1 pt. capacity, with wick. The rice was already measured, but she waited until SS could weigh it, before putting it on to cook. SS used her flashlight to see the scale and her notebook.

The kitchen here has a thatched roof, well smoked, but the walls and "windows" are of woven split bamboo. A sliding wooden "window" can be pushed back to allow access to a broad shelf outside. Here a large pan of pond water is kept, so that dishes may be rinsed and hands rinsed after each operation. Dishes are stacked upside down, on a wooden rack nearby, to dry.

The stove area in the corner has place for one fire, but several places for pots to stand. Downstairs, under the shed near the fish pond, is a larger clay stove, where the niece cooks the rice in the morning (enough for noon as well) and some other items; for example the (3)khii-(2)leg leaves which were cooked last night for use in sour curry this a.m. This probably keeps the kitchen cooler than it would otherwise be. Waste, fish bones, vegetable parings, etc., which are to be given to the chickens, can be thrown below through the space between two floor levels (kitchen and main rooms).

Rice water, coconut water, and food left in the serving bowls when the meal is over, are given to the dogs. A bowl is kept below, near where rice is drained, for dog food. Food left in pots is kept for humans to eat.

Fish caught in the pond are kept alive in pond water, in a water jar. When a fish is wanted, the niece catches one from the jar, stuns it with the back of her knife, and scales and cleans it on a split log nearby (rounded side of log up). The fish is put into a small basket, and the niece

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1. In reproducing these notes, slight changes have been made such as substitution of descriptive terms for personal names which appeared in the original.

117 takes it down the steps to the fish pond, where she swishes
252 the basket around to wash the fish, and rinses her hands at the same time.

[23] There are some hazards to the food--chickens trying to get at the edible part of fish while the niece cleans it (she leaves the scales, etc. for them to eat); cat and kittens in the kitchen, having to be driven away from the grated coconut and coconut milk, and getting an occasional unweighed nip. Whether we start to weigh food for the evening meal or a.m. meal, some cooked foods are apt to be used, either left over
[242] from a previous meal, or cooked in advance. This a.m., for
[126] example, buffalo meat, already cooked (but not weighed before cooking) was used, and (3)khii-(2)leg leaves, which SS weighed last night. These latter were cooked last night, to reduce bitterness, then put into curry today.

Description of Food Preparation Area in a Relatively Poor Household

Wednesday, May 27, 1953

117 Arrived about 5:45 a.m. While other food was being pre-
[262] pared, the 11-year old son came in with a package of salted white radish and a small milk tin with some coconut oil which had just been bought. This is the house which we found flooded when they sent for us to see the baby last fall. The roof seems to be well thatched. The floor is not wet after last
[352] night's downpour. The bed platform, in one corner, is about
[85] 8 x 10 feet. The baby's cradle hangs above it. In the oppo-
[362] site corner is a shelf where utensils are kept. Some food,
[261] in paper bags, is in a basket hung from the roof. Fresh fish
[359] is kept in a jar of water until needed. The stove is on a small mound of earth, and further elevated on a small box (just big enough for the stove) filled with earth.

[352] We sit on a mat, spread on the mud floor, with the
[355] scales, plastic bowls and waxed paper ready for weighing food. The children lie on a mat nearby. In the house is a fresh mound of earth, a small straw bin with rice, and various pieces of equipment.

Notes on Meal Service

In a Relatively Prosperous Household

Friday, May 22, 1953

117 262 Before breakfast is served, the six-year old girl comes with a piece of jack fruit. SS weighs it and tells her to bring back what she does not eat. Later she comes with hands full of stones (14 of them). She has eaten this much as a "snack" before the regular meal. The grandmother finishes the piece (7 stones) and gives the rind to SS to weigh.

At breakfast the family sits in a circle on the kitchen floor. Each person except the baby has his own bowl of rice before him. In the center of the circle, within reach of all, are four small dishes of "with-rice" which has been prepared for breakfast: sour curry of buffalo meat, curry of (3)khii-(2)leg leaves, bean sprouts and one small fried fish. The mother takes a very small bit of fish on a spoon with rice, and feeds baby. During breakfast baby has 6 bites of rice with fish, nine small spoonfuls of rice with sour curry. The mother herself eats one bite of fish. She takes four spoonfuls of sour curry on plate with rice. This is shared with baby. Mother and baby eat mainly rice, fish and sour curry of buffalo meat, whereas grandmother and the six-year old girl have curry of (3)khii-(2)leg leaves and bean sprouts with their rice.

In a Relatively Poor Household

117 853 [593]

Wednesday, May 27, 1953

While the mother finishes the meal preparation, the seven-year old girl feeds the baby, first rice with some chopped egg, then rice with the "water" from the egg. The mother remarks that she cannot cook unless someone looks after the baby.

117 264 Technique of eating -- A tray with the "with-rice" is set out, also a bowl with water, for rinsing the hand, and a basin or bowl with drinking water. There are spoons in the "with-rice," but these seem to be used for taking some of the juice, which may be eaten directly or put on the individual's bowl of rice. Solid pieces are taken from the serving dish by hand, and mixed with some of the rice, which is then picked up in the right hand. Occasionally the person eating will rinse his hand with water. When finished, each person rinses his bowl (using either water from the bowl nearby, or from the general supply -- in this case the canal). Dishes are turned upside down on the platform near the stove, to dry.

NOTES ON THE PREPARATION AND NUTRITIVE VALUE OF COCONUT MILK AND COCONUT CREAM

252 The term coconut cream ((5)hua (2)ka-(4)thi), as it
262 was used in Thailand, referred to the product which was made by squeezing grated coconut with little or no addition of water. Coconut milk ((4)naam (2)ka-(4)thi) was made by squeezing grated coconut repeatedly with water. Coconut cream might be made first, and the residue extracted one or more additional times to obtain coconut milk. The terms coconut milk and coconut cream apparently are not used consistently. Losee (1952) commented on this when he described
[114] [171] the preparation of coconut cream in Samoa, and said that it was sometimes called coconut milk. Miller et al. (1936), in describing the preparation of coconut milk said "If a thick coconut milk to serve over puddings, taro leaves, etc. is desired, 1/2 to 3/4 cup of coconut water or boiling water should be poured over 3 cups of grated coconut. . . . If the milk is to be used in curry sauce for chicken, eggs, shrimps, or in cornstarch pudding, a larger quantity of water (1 to 2 cups of water to 3 cups of grated coconut) may be used."

• 126 In carrying out the dietary study, the observer weighed the grated coconut meat, the residue and the final products, coconut milk or cream, or both. She did not weigh the water as it was added in successive portions, but the amount of added water could be calculated.

184 The ratio of coconut milk to meat varied considerably,
262 but on the average, households in Group A obtained coconut milk which weighed more than eight times as much as the coconut meat from which it was made. Households in Group B obtained less than 2½ times as much milk by weight as coconut meat. The number of extractions made varied from 2 to 6,
146 with a mode of 3. Obviously, the products made by Groups A
171 and B, although both called coconut milk, had markably differ-
262 ent percentage composition, and neither was similar to "coconut milk" for which values could be found. These values were as follows:

Authors	Location	Coconut milk grams per 100 gm. E. P. Pro.	Fat	Carbo.
Bocobo et al.	Philippine Islands	3.6	33.2	38.4
Food and Drug Division	Thailand	3.52	34.75	1.52
Miller et al.	Hawaii	4.0	27.0	18.91

1. Personal communication

Methods.

All measurements of infants and children were made by one or more members of the research group. Equipment and procedures are described in the Appendix (p. 58). 126

In all, observations were made on 80 babies. For some of these, however, only one or two measurements were obtained. Such records were inadequate for most purposes of this study. Fairly complete sets of measurements were obtained for 71 babies through a total of 449 visits (Table 14). Since our aim was to obtain as much information as possible about babies from birth onward, the larger numbers of children were in the lower age ranges. 125

Nine babies were measured once or twice but were not followed longer because of removal from the village, inability of a mentally subnormal mother to cooperate, death (2 cases), and in one instance, reluctance to cooperate on the part of the mother of an illegitimate baby.

The investigation covered a period of 18 months, and visits were made at intervals of about 3 months, thus, most of the children were measured 6 or 7 times (Table 15).

Table 15. Number of Times Children Were Weighed and Measured, Bang Chan, Thailand, 1952-54.

Number of Measurements	Number of Children
3[1]	3
4	2
5[1]	6
6[2]	21
7	36
8	3

1. An additional measurement of weight but not of height was made on one child.

2. An additional measurement of weight but not height was made on two children.

Sometimes mother and baby were not at home when the scheduled visit was made. If the household was remote from headquarters it might not be possible to return soon without neglecting other equally urgent work. In other cases the child was visited and the food intake recorded, but the child was unwilling to allow himself to be measured; occasionally the child was

A [see p. 33 - Analysis]

4:Phillips E-4,5 (1956-1957) 1966
AO7 Central Thai AO7
Bang Chan

521 The sociological context of a story-telling is probably what is most
522 important here. Bang Chan is a community where other than cultivating
538 the single rice crop and attending to daily household chores and religious activities, the villagers realistically have little else to do but talk to each other. This is clearly not an inevitable attribute of the peasant condition, but it is true of Bang Chan where little attention is given to such creative leisure activities as craftsmanship, music, and art, and where there is little occupational specialization. In fact, probably more time is given to gossiping than to any other single waking activity except daydreaming. Bang Chaners talk of many things, serious as well as lighthearted: the price of rice, religion, gambling, the doings of "big people," family disputes, and the like. However, by far one of the largest segments of their total conversational repertoire is given over to "funny" stories. Of course, no story is ever *exclusively* humorous in nature; all communication is inherently multidimensional, and even the funniest story has a substantive, non-humorous message. However, if stories may be judged by their behavioral effects (laughter) irrespective of their intellectual content, then the function of a major part of Bang Chan gossip is amusement.[10]

538 The motivations for the selection of banana peel type stories are more
154 complex. In part, the choice seems prompted by a "there but for the grace of God go I . . . " mentality. As suggested earlier, Bang Chaners have a keenly developed sense of the possible: to them, this is a world where anything, not only the probable or the predictable, can happen. The banana peel story, with its emphasis on the painfully ludicrous and extreme, is a perfect representation of such an uncertain world. Its beauty is

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[10] During the early stage of field work, I attempted to do systematic naturalistic observations of these gossip groups. The purpose was simply to identify the kinds of topics uppermost in the villagers' minds and the modes of interaction that most frequently developed during the sessions; it was hoped that the latter information might be related to the psychological test materials of the discussants. As a precisely designed and executed project, the effort, however, was dropped after a short time. For one thing, it was too difficult for two observers to record the *simultaneous* verbal and kinesthetic interaction of *several* people without the aid of a self-powered tape recorder and with the added burden of having to strain the material through the translation process. The task was further complicated by the fact that the membership of these groups continually changed as people would leave and enter the conversations. Also the groups would often break down into smaller sub-groups. Most important was the sheer multidimensionality of the conversation: any one utterance could simultaneously be funny, aggressive, boastful, carry practical information, etc. However, enough information was culled from these early attempts and later less ambitious ones to prompt the statements presented here. It is this writer's observation that one of the reasons behind the success of so much of the "small group" research conducted in the United States is that the groups studied have been *problem solving* or *task-oriented*, rather than simple gossip groups. The highly functional nature of the former has provided built-in constraints on the freedom of action permitted the discussants, and has made observational problems comparatively easier to deal with.

[123] [114] [126]

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[126] Stool examinations were made at the Department of Pathology, Chulalongkorn Hospital, Bangkok.

[128] Some preliminary tabulations and analyses of data were made at the Division of Statistical Services, National Economic Council, Bangkok, through the courtesy of its director, Dr. Tooi Xoomsai.

000 For the interest and friendliness of the people of Bang Chan, without whose cooperation the study would not have been possible, the author is particularly grateful.

[p. vi is blank]

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Deaths of infants a few days old, with a description of lockjaw, inability to suck, stiff back and clenched hands, were recognized as due to tetanus. The common practice of native midwives is to place the cord over a hard rhizome or clod of earth and to cut it with a tapered piece of bamboo. Thus, infection with the tetanus organism may occur from contact with the soil. Note that 12 of 26 deaths reported for infants under 1 month, were diagnosed as tetanus or probably tetanus. Zimmerman (1931) summarized important causes of death in Siam, based on the physician's diagnosis made after symptoms were described by the head of the household. Of 1800 deaths which occurred in the 18 months preceding the survey, 2% were diagnosed as tetanus. For the Central area, 3.8% of 495 deaths were from tetanus. Most, if not all of the cases of infantile tetanus could be prevented if native midwives learned to avoid contact of the cord with earth or a soil-coated rhizome. By using sterile scissors for cutting the cord instead of tapered bamboo which must be pressed against another surface to accomplish the cutting, contact with soil could be avoided. Of 335 household heads interviewed, 220 owned scissors of some kind (Ralis, 1955).

Infants several months old, who had some of the symptoms of infantile beriberi, as convulsions and almost voiceless crying, were considered as cases of infantile beriberi only if the mother had symptoms of beriberi, such as numbness or tingling in the extremities, or difficulty in walking, at the time. One mother had lost 3 infants at 3 or 4 months of age, with similar symptoms, but described the symptoms of beriberi in herself at the time of the death of the last baby only. The other two cases were therefore listed as convulsions, cause unknown. The occurrence of infantile beriberi reflects the unsatisfactory nutriture of the mother, whose milk is therefore low in thiamine content. To prevent deaths from infantile beriberi, the general level of nutrition in the village, and particularly the food habits of pregnant and nursing women, should be improved.

Note also the number of deaths from "debility." As the Joint FAO/WHO Expert Committee on Nutrition (1951) has pointed out, the number of early deaths from "congenital debility" becomes insignificant where the health and nutritional status of pregnant women approaches the optimal.

Intestinal Parasitism and Bowel Habits

Intestinal Parasitism. - All school children were provided with tin containers labelled with their names, and asked to bring a stool sample to school. Fourth grade children whose first stool samples were negative, were asked to bring a second specimen. Parasites were found in some of these second

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125 specimens. In all, specimens were obtained from 189 or 81% of the children and of these 32% were negative. In 128 stools
126 containing parasites, 196 infecting organisms were found, or an average of 1.5 per infected child. Protozoa and helminths which
164 are pathogenic or which may cause severe diarrhea were identified 126 times, and harmless forms 70 times. Of the harmful forms, Ascaris lumbricoides was found in 96 or 51% of the stool samples, Giardia lamblia in 19, or 10%, and hookworm, Endamoeba histolytica, Trichuris trichiura and Diphyllobothrium in 2% or less. Of the harmless forms noted, Endamoeba coli was found in 45 specimens or 24%, Iodamoeba williamsi in 21 or 11%, Endolimax nana and Chilomastix mesnili each in less than 2%. Doubtless the extent of intestinal parasitism in these school children was greater than the figures indicate, since some cases would be missed in examination of single stool specimens collected in this way. One might expect intestinal parasitism to be relatively common, also, among other family members.

125 Bowel Habits. - In connection with the clinical survey,
147 persons examined were asked whether they had "constipation" or "diarrhea" frequently, occasionally, or never, i.e. not within
514 the past 6 months. As the physician phrased the questions concerning "constipation," the replies indicated whether the respondent had daily bowel movements ("never constipated"), or usually had a bowel movement each day ("occasionally constipated") or usually had longer intervals between bowel movements ("frequently constipated"). Replies are summarized in Table 17.A

126 Considering the inadequate sanitation in Bang Chan, and
147 the prevalence of intestional parasitism, the fact that 3/4 of the persons questioned said they "never" had diarrhea, is worthy of note. Most persons who reported having diarrhea,
[146] were troubled occasionally rather than frequently. The fact that nearly 2/5 of those questioned had bowel movements less often than once a day, is not surprising in view of the fact that diets which are relatively low in fibrous foods and in the B complex vitamins frequently result in sluggish behavior of the large intestine. That approximately 3/5 of the respondents in Bang Chan usually had a daily bowel movement is perhaps more noteworthy. Even in areas where diets tend to be much more liberal, some persons usually have bowel movements at intervals of 2 or 3 days or even longer. If such persons have stools of normal character and experience no discomfort, this bowel habit may be considered normal for them.

A [see p. 43 – Analyst]